

Section 02275

Erosion and Sediment Control

PART 1 GENERAL

1.1 SCOPE

This section includes, but is not limited to the following requirements for erosion and sediment control:

- A. Soil erosion and sedimentation control measures for work included in this Contract including areas disturbed by the Contractor.
- B. Dumped rock fill, erosion control blankets, geotextile and High Density Polyethylene (HDPE) liner for ditches, sumps and erosion control areas.
- C. Management of erosion and sediment control measures installed by this contract and existing erosion and sediment control measures and facilities including Retention Basins 1, 2 and 3, transfer line and related appurtenances as shown on the Construction Drawings.
- D. Control of surface water and management of ponded water in construction areas during site preparation and excavation activities as specified in this Section.
- E. Management of the Active Flyash Pile (AFP).

1.2 RELATED SECTIONS AND PLANS

- A. Section 02205 - Impacted Material Excavation.
- B. Section 02900 - Seeding.
- C. Part 8 - Environmental Health and Safety, and Training Requirements.

1.3 REFERENCES

- A. Area 2 Phase I Southern Waste Units Implementation Plan for Operable Unit 2, October 1997, Revision C.
- B. Latest version of American Society for Testing Materials (ASTM) Standards:
 - 1. ASTM D 3786 Standard Test Method for Hydraulic Bursting Strength of Knitted Goods and Nonwoven Fabrics-Diaphragm Bursting Strength Tester Method.
 - 2. ASTM D 4491 Standard Test Method for Water Permeability of Geotextiles by Permittivity.
 - 3. ASTM D 4533 Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
 - 4. ASTM D 4632 Standard Test Method for Breaking Load and Elongation of Geotextiles (Grab Method).
 - 5. ASTM D 4751 Standard Test Method for Determining Apparent Opening Size of a Geotextile.
 - 6. ASTM D 4833 Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
- C. Title 40, Code of Federal Regulations, Part 261, Hazardous Waste Management System, Identification and Listing of Hazardous Waste.

1.4 SUBMITTALS

- A. For each product proposed for use, submit the following to the Construction Manager for review within ten (10) calendar days from the Notice to Proceed:
 - 1. Manufacturer's product data and recommended methods of installation; and
 - 2. Certification from supplier or manufacturer that the product meets the material requirements of this Section.
- B. Prepare and submit to the Construction Manager within ten (10) calendar days from Notice to Proceed a Surface Water Management and Erosion and Sediment Control Plan that includes the following, at a minimum:

1. descriptions of the surface water management and erosion and sediment control measures to be implemented throughout the duration of the contract;
 2. methods for installing and maintaining surface water management and erosion and sediment control measures;
 3. drawings illustrating, in plan view, the location and sequencing of the surface water management and erosion and sediment control measures;
 4. methods and measures for collection and discharge of surface water from the excavated areas and measures to minimize erosion of the excavated areas during progress of the work, inclement weather and at the end of each work day.
 5. inspection and management of the AFP prior to excavation.
 6. methods for installing HDPE geomembrane in Interceptor Ditch 1, 2 and 3.
- C. Submit manufacturer's material certification and installation methods and requirements for the geomembrane liner within ten (10) calendar days from the Notice to Proceed to the Construction Manager for review and approval. Certificates shall include the name of the manufacturer, chemical composition, and certification for the HDPE liner material.

1.5 QUALITY ASSURANCE PROGRAM

- A. Inspect erosion and sediment control measures to evaluate effectiveness of the control measures. Any repairs to the erosion and sediment control measures shall be corrected within 24 hours of problem discovery. Inspections shall occur at the following minimum frequencies:
1. Weekly;
 2. Daily after each rain event exceeding 0.5 inches at the Fernald Environmental Management Project (FEMP);
 3. At least daily during prolonged rainfall events at the FEMP.
- B. Records of inspections shall be kept on file at Contractor's site office and shall be submitted monthly to the Construction Manager.

1.6 HEALTH AND SAFETY REQUIREMENTS

Environmental Health and Safety, and Training requirements shall be as specified in Part 8.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Furnish silt fence with either woven or non-woven fabric. Silt fence shall:
 - 1. be woven fabric consisting of slit films of polypropylene treated with ultraviolet light stabilizers, or be non-woven fabric consisting of long chain polymeric filaments or polyester yarns and treated with ultraviolet light stabilizers;
 - 2. be inert to chemicals commonly found in soils and to hydrocarbons;
 - 3. be resistant to mildew, rot, insects, and rodent attack; and
 - 4. have fabric and fence post properties and minimum dimensions in accordance with ODNR.
- B. Dumped Rock Fill: Dumped rock fill shall meet the requirements of ODOT Item 601.07 for the type specified on the Construction Drawings.
- C. Nonwoven geotextile fabric for beneath dumped rock fill and the Special Material Transfer Area shall meet the following minimum values:

PROPERTY	TEST METHOD	ROLL VALUES
Grab Tensile Strength (lbs)	ASTM D4632	80
Puncture (lbs)	ASTM D4833	25
Trapezoidal Tear (lbs)	ASTM D4533	25
Mullen Burst (psi)	ASTM D3786	130
Apparent Opening Size	ASTM D4751	less than 0.6mm
Permittivity (cm/sec ²)	ASTM D4491	1 X 10 ⁻²

D. The erosion control blanket shall be constructed of 100 percent coconut fiber stitch bonded between a heavy duty UV stabilized bottom net and a heavy duty UV stabilized top net. The crimped netting shall form prominently closely spaced ridges across the entire width of the mat. The netting shall be stitched together on 1.5 inch centers with UV stabilized polyester thread to form a permanent three dimensional structure. The mat shall have the following physical properties and be rated for 2 years service life for use on 1:1 slopes.

1. Material Content
 - a. Coconut fiber: 100 percent; 0.5 pounds per square yard.
 - b. Netting: Top and bottom - Heavy UV stabilized; polypropylene; 3 pounds per 1,000 square feet.
 - c. Thread: UV stabilized polyester.
2. Physical Specifications (Roll)
 - a. Width: 6.5 feet.
 - b. Length: 83.5 feet.
 - c. Weight: 30 lbs \pm 10 percent.
 - d. Area: 60 square yards.

- E. Geomembrane liner material for ditch liner shall be 60 mil textured High Density Polyethylene (HDPE). HDPE geomembrane liner shall be factory seamed and transported in largest sections possible to minimize field seaming. Field seams shall be as recommended by the HDPE manufacturer.
- F. Dust suppression/crusting agent shall be as approved by the Construction Manager and shall meet the following requirements:
1. The dust suppression/crusting agent shall be a pine sap emulsion comprised of a 100% organic emulsion produced from naturally occurring resins (pine sap). The dust suppression/crusting agent shall not be comprised of chloride, lignosulfonate, petroleum, or asphaltic type emulsions. The dust suppression/crusting agent must provide dust suppression and surface stability for exposed soils, both disturbed and undisturbed soils, and exposed coal fired boiler ash (flyash). The dust suppression/crusting agent shall be compatible with application via a hydro seeder, and must not require intense cleaning of equipment after application. Once cured, the dust suppression/crusting agent shall be non-tracking (i.e., will not stick to boots or tires).
 2. The dust suppression/crusting agent shall not have hazardous characteristics of ignitability, corrosivity, reactivity, or toxicity as defined in 40 CFR 261 for a hazardous waste in either its pre-applied or cured states.
 3. The dust suppression/crusting agent shall have a flash point greater than 200 F. The dust suppression/crusting agent shall be neither a flammable nor combustible liquid per DOT definition. The dust suppression/crusting agent must not be susceptible to significant deterioration from exposure to the elements, including sunlight.

PART 3 EXECUTION

3.1 GENERAL

- A. Construct and maintain erosion and sediment control measures as specified in this Section, and as shown on the Construction Drawings and the Surface Water Management Plan included as an appendix to the Area 2 Phase I Southern Waste Units Implementation Plan for Operable Unit 2. Maintain existing erosion and sediment control facilities and measures in accordance with Part 6 and Systems Plan.
- B. As the excavation progresses, excavate depressions in the excavated area to be used as temporary water collection sumps as shown on the Construction Drawings. Water accumulated in the sumps shall be pumped directly to the nearest retention basin via portable sump pump system and flexible hose. Excavations shall be sloped to sumps and/or graded to drain to existing ditches discharging to the nearest retention basin. Excavations are to be kept free of standing water. Runoff into excavation areas shall be minimized by grading the surrounding area away from the excavation area and/or by diversions. If sump excavation penetrates the Great Miami Aquifer (GMA), line the sump with a 60 mil textured HDPE geomembrane liner to prevent potential contamination of the GMA. Geomembrane liner shall be installed and anchored in accordance with Interceptor Ditch Detail as shown on the Construction Drawings.
- C. Remove erosion and sediment control measures at the direction of the Construction Manager after the disturbed areas are established with satisfactory conditions of seeding as specified in Section 02900.
- D. Compact geomembrane liner anchor trench backfill soil by thoroughly tamping in maximum one foot lifts.

3.2 SILT FENCES

Install in accordance with the requirements of the ODNR Rainwater and Land Development Standards. Place at locations shown on Construction Drawings prior to start of site preparation and excavation activities. Remove accumulated sediment when deposition reaches one-half the height of the silt fence or sooner if accumulated sediment prevents adequate performance of silt fence; remove accumulated sediment within 24 hours of discovery. Sediment shall be removed as specified in Section 02205.

3.3 EROSION CONTROL BLANKETS

Install in accordance with manufacturer's recommendations in the ditches shown on the Construction Drawings. Erosion control blankets shall be anchored with wire staples, spaced at a maximum of 3 foot on center, with size as shown on the Construction Drawings.

3.4 INACTIVE EXPOSED EXCAVATION & CONSTRUCTION AREAS

- A. Forty-five (45) calendar days shall be the maximum time that an area can be left in an exposed condition without seeding. If an exposed excavation area shall not be worked for a period of 45 calendar days, or more, the soils shall be stabilized within seven (7) calendar days of excavation by one of the following methods:
 - 1. During the seeding season, temporary seeding shall be applied as specified in Section 02900.
 - 2. During non-seeding seasons, crusting agents shall be applied as specified in this Section.
- B. Forty-five (45) calendar days shall be the maximum time that a stockpile can be left in an exposed condition without seeding. Stockpiles that are to be inactive for a period of 45 calendar days, or more, shall be stabilized within seven (7) calendar days by means of a crusting agent, as specified in this Section.

3.5 RETENTION BASINS AND DITCHES

- A. Remove accumulated sediment and debris from the existing retention basins and ditches. In no case shall sediment build up to a depth greater than the painted indicator on the riser pipe in the retention basins or to a depth greater than one-half the constructed depth of the ditch.
- B. Remove sediment and debris as specified in Section 02205.
- C. Protect the existing pump station, transfer line, HDPE liner and appurtenances during the removal of sediment and debris.

3.6 DUMPED ROCK FILL

- A. Place and maintain dumped rock fill as indicated on the Construction Drawings and in accordance with ODOT Item 601.07.
- B. Maintain the existing dumped rock fill in the SWU area.

3.7 HIGH DENSITY POLYETHYLENE (HDPE) LINER

- A. Install and maintain HDPE liner in the ditches as shown on the Construction Drawings.
- B. Maintain the existing HDPE liner in Retention Basins 1, 2 and 3 and ditches.

3.8 ACTIVE FLYASH PILE

Inspect the AFP on a monthly basis, as a minimum. Apply crusting agent to minimize dust in accordance with Part 6 and the Dust Control Plan.

END OF SECTION